# Young Adults: Vulnerable New Targets of Tobacco Marketing

Lois Biener, PhD, and Alison B. Albers, PhD

*Objectives.* We examined young adult smoking patterns and receptivity to cigarette advertising to assess vulnerability to tobacco marketing strategies.

*Methods.* We obtained data from a telephone survey of 12072 Massachusetts adults.

*Results.* Smokers aged 18 to 30 years were more likely than older adults to smoke only occasionally and to consume fewer than 10 cigarettes per day. They also were more receptive to cigarette marketing and were more likely to be frequent patrons of bars and clubs.

*Conclusions.* Many young adult smokers are in the initiation phase of smoking and are likely to undergo a transition to either nonsmoking or heavier smoking. If unimpeded by regulation, tobacco promotion in bars and clubs is likely to lead to increased adult smoking prevalence. (*Am J Public Health.* 2004;94:326–330)

The 1998 agreement reached between the attorneys general of 46 states and the 5 major tobacco companies included a series of limitations on advertising and promotional activities. These limitations include a prohibition on youth targeting; a ban on the use of cartoons in advertising, marketing, or packaging; the elimination of billboards and transit advertising; and a ban on distribution of nontobacco items that contain brand names (i.e., promotional items).[1] These concessions by the tobacco companies have been made in the context of broad support for the notion that children should be protected from inducements to engage in unhealthy behavior.

Equally important to public health practitioners is the observation that smoking initiation largely occurs before 18 years of age[2–4] and the expectation that if young people can be prevented from becoming addicted to nicotine before 18 years of age, they are unlikely to ever start smoking. In other words, the belief is that restrictions on tobacco marketing to youth will result in lower smoking prevalence among adults. This belief rests on the assumptions that by the time people reach 18 years of age, (1) their smoking patterns will be well established and (2) they will be relatively invulnerable to the marketing and promotion of cigarettes. Evidence that the tobacco companies are refocusing their prodigious marketing resources on young adults through the use of promotional activities in bars and nightclubs highlights the importance of testing these assumptions.

Several studies have documented the rapid increase in the number of tobacco company–sponsored advertisements of bars and clubs in the entertainment sections of weekly newspapers in many cities across the United States.[5,6] During the summer of 2001, for example, RJ Reynolds advertised "Seven Pleasures of the Casbah" and provided free Camel cigarette samples, giveaways, and entertainment at adult-only clubs in 70 US cities.[7] Given evidence that the increase in cigar advertising was associated with an expansion in cigar smoking among young adult males,[8] it is likely that increased cigarette promotion to young adults will be similarly effective.

We examined factors that could signal young adult vulnerability both to smoking initiation and to progression from low-level smoking to heavy smoking as a consequence of bar and club promotions. Using data from a population-based survey in Massachusetts, we compared smoking behaviors and attitudes of young adults between the ages of 18 and 30 years with those of older adults. We hypothesized that compared with older adults, (1) young adult smokers would be more likely to be in the initiation phase of smoking and more likely to be light, irregular smokers who smoke in response to social cues rather than to maintain their addiction, (2) young adults, regardless of smoking status, would be more likely to be receptive to tobacco advertising, and (3) young adults would be more likely to be exposed to tobacco promotions in bars and clubs.

## METHODS

### Sample Design

Data for our study were obtained from the Massachusetts Adult Tobacco Survey (MATS), a 20-minute, random-digit-dialed telephone survey of a geographically stratified probability sample of Massachusetts residences with telephones. Starting in March 1995, the survey was conducted monthly by professional interviewers at the Center for Survey Research of the University of Massachusetts, Boston. Approximately 225 interviews were conducted each month. Our report includes data collected between March 1995 and June 2000. The proportion of eligible households successfully screened during this period was 71%; interviews were completed with 81% of the eligible respondents, resulting in a sample size of 14806. Our analyses were limited to a sample of 3482 adults between 18 and 30 years of age and 8967 adults between 31 and 65 years of age.

### Measures

*Smoking status.* Current smokers were those who reported having smoked at least 100 cigarettes in their lifetimes and who currently smoked "every day or some days." Those who had not smoked 100 cigarettes within their lifetimes and those who currently smoked "not at all" were classified as nonsmokers. Age at initiation was measured with the question, "At what age did you start to smoke cigarettes regularly?" The variable was dichotomized to those who began smoking at $<18$ years of age or earlier and those who began $\geq 18$ years of age.

*Smoking patterns.* Although some smokers sustain a low-level habit throughout their lives, the vast majority move to regular daily smoking of 10 or more cigarettes per day within a few years of initiation.[9] For the purposes of our study, we assessed the nature of

the smoking habit with 4 different measures: (1) whether respondents smoked every day, (2) the number of cigarettes smoked per day, (3) the number of minutes to the first cigarette of the day, and (4) whether the respondent was a "social smoker." Current smokers were classified as either daily smokers or occasional smokers, depending on whether they reported smoking "every day" or "some days," respectively. Light smoking was defined as smoking 1 to 9 cigarettes per day, and heavy smoking was defined as smoking 10 or more cigarettes per day. Level of nicotine dependence also was determined by how soon after waking respondents reported smoking their first cigarette of the day. Greater dependence was attributed to those who reported smoking within the first 30 minutes of waking as opposed to waiting more than 30 minutes after waking. Smokers were asked, "Do you smoke mainly when you are with other people, mainly when you are alone, or do you smoke as often by yourself as with others?" Respondents who indicated that they smoke more often when they were with others were defined as social smokers.

*Receptivity to cigarette advertising.* Two measures of receptivity to cigarette advertising were included in the survey. Respondents were asked the open-ended question, "Of all the cigarette advertisements you have seen, which brand's ads attracts your attention the most?" Respondents either named a particular cigarette brand or stated that they were not attracted to any cigarette advertisements. Respondents also were asked whether they owned a piece of clothing or other item that had a tobacco brand name or logo on it. Naming a brand and owning a promotional item were 2 indicators of receptivity to tobacco marketing.

*Likelihood of exposure to tobacco promotions.* The more often an individual goes to a bar or club, the more likely he or she is to encounter tobacco promotions in these venues. The survey included a question on the frequency with which respondents go to "a club, bar, or lounge where alcohol is served." Responses were dichotomized to those who reported going at least once per week versus those who go less than once per week.

*Demographic variables.* The survey included questions on age, education, gender, and race/ethnicity. Although young adults are usually defined as between 18 and 24 years of age, that group accounts for only about 12% of the adult population and, hence, a small proportion of our sample. To improve statistical power, young adults were defined as those between 18 and 30 years of age, whereas older adults represented those between 31 and 65 years of age. Education was dichotomized to those who had obtained a high school degree or less versus those who had greater than a high school degree. The race/ethnicity variable was dichotomized to White versus non-White (or minority).

**TABLE 1—Characteristics of Sample of Adults, by Age: Massachusetts, 1995–2000**

| | Age Group, y | | |
|---|---|---|---|
| | 18–30 (n = 3482) | 31–65 (n = 8967) | *P* |
| Gender | | | |
| Male | 46.3 | 45.5 | .701 |
| Female | 53.7 | 54.5 | . . . |
| Race/ethnicity | | | |
| White | 80.2 | 89.8 | .000 |
| Non-White | 19.8 | 10.2 | . . . |
| Education level | | | |
| ≥ High school | 31.6 | 32.3 | .698 |
| > High school | 68.4 | 67.7 | . . . |
| Current smoker | | | |
| No | 76.3 | 81.2 | .005 |
| Yes | 23.7 | 18.8 | . . . |

*Note.* ns are unweighted; proportions are weighted. Probability listed is for the $\chi^2$ statistic.

## Analyses

Bivariate associations were assessed with chi-square tests. We used multiple logistic regression analyses to examine the impact of age on the dependent variables while controlling for race/ethnicity. All statistical analyses were conducted with SUDAAN software (Research Triangle Institute, Research Triangle Park, NC), which adjusts standard errors for the clustering inherent in complex survey sampling. All analyses presented here were weighted.

# RESULTS

## Sample Characteristics

The descriptive statistics in Table 1 show differences between younger and older adults on selected demographic and smoking variables. Consistent with Massachusetts figures from the US Census 2000,[10] our young adult group in Massachusetts included significantly more non-Whites than the older adult group (19.8% vs 10.2%, respectively). Additionally, more young adults than older adults reported being a current smoker ($P<.01$).

Non-Whites have been shown to initiate smoking later than do Whites[11] and to smoke fewer cigarettes per day.[12] To ensure that differences between younger and older adults were not simply a consequence of the differential racial/ethnic composition by age group, each of the dependent variables was subjected to multivariate logistic regression analyses that estimated the age effect, the race/ethnicity effect, and the interaction between age and race/ethnicity. Significant effects and interactions are noted in footnotes to the tables.

## Smoking Characteristics

Table 2 shows smoking characteristics by age and race/ethnicity among Massachusetts smokers. A substantial proportion of both young adult (30.6%) and older adult smokers (40.6%) reported that they began smoking regularly after 18 years of age, and the proportion reporting late initiation was significantly greater for older adults. It is difficult to discern whether this difference is a true cohort effect or a reflection of recall bias late in the life cycle. Among young and older

**TABLE 2—Smoking Characteristics Among Smokers, by Age and Race/Ethnicity: Massachusetts, 1995–2000**

| | Total | | | White | | | Non-White | | |
|---|---|---|---|---|---|---|---|---|---|
| | 18–30 y (n = 944) | 31–65 y (n = 2135) | *P* | 18–30 y (n = 691) | 31–65 y (n = 1745) | *P* | 18–30 y (n = 244)[a] | 31–65 y (n = 316) | *P* |
| Smoking initiation, % | | | | | | | | | |
| < 18 y[a,b] | 69.4 | 59.4 | .017 | 72.9 | 61.5 | .009 | 58.4 | 39.1 | .102 |
| ≥ 18 y | 30.6 | 40.6 | . . . | 27.1 | 38.5 | . . . | 41.6 | 60.9 | . . . |
| Smoking characteristics, % | | | | | | | | | |
| Occasional[b] | 29.1 | 14.5 | .000 | 28.5 | 13.6 | .000 | 31.0 | 25.0 | .622 |
| Daily | 70.9 | 85.5 | . . . | 71.5 | 86.4 | . . . | 69.0 | 75.0 | . . . |
| Total | 100 | 100 | | 100 | 100 | | 100 | 100 | |
| 1–9 cigarettes per day[a,b] | 41.7 | 21.6 | .000 | 37.5 | 19.3 | .000 | 61.9 | 36.9 | .039 |
| ≥ 10 cigarettes per day | 58.3 | 78.4 | . . . | 62.5 | 80.7 | . . . | 38.1 | 63.1 | . . . |
| Total | 100 | 100 | | 100 | 100 | | 100 | 100 | |
| > 30 minutes to first cigarette[b] | 62.3 | 47.2 | .001 | 60.7 | 47.1 | .005 | 69.8 | 44.6 | .022 |
| ≥ 30 minutes to first cigarette | 37.7 | 52.8 | . . . | 39.3 | 52.9 | . . . | 30.2 | 55.4 | . . . |
| Total | 100 | 100 | | 100 | 100 | | 100 | 100 | |
| Social smoker[b] | 30.7 | 17.5 | .001 | 31.4 | 16.5 | .000 | 25.8 | 23.9 | .839 |
| Not a social smoker | 69.3 | 82.5 | . . . | 68.6 | 83.5 | . . . | 74.2 | 76.1 | . . . |
| Total | 100 | 100 | | 100 | | | | | |

*Note.* ns are unweighted; proportions are weighted. Probability listed is for the $\chi^2$ statistic.
[a]Main effect for race/ethnicity controlled for age ($P < .001$)
[b]Main effect for age controlled for race/ethnicity ($P < .01$)

adults, a larger proportion of non-Whites than of Whites reported late-onset smoking ($P < .001$).

Table 2 also shows that among current smokers, young adults are more likely than their older counterparts to smoke only occasionally, to smoke fewer than 10 cigarettes per day, to wait more than 30 minutes before smoking their first cigarette of the day, and to characterize themselves as social smokers. These age differences were apparent for both Whites and non-Whites, but the age differences in late initiation, occasional smoking, and social smoking were not statistically significant for non-Whites.

There were no significant interactions between age group and race/ethnicity in multivariate analyses of smoking patterns. However, those analyses did demonstrate that non-White smokers—both younger and older—smoke fewer cigarettes per day than Whites (Table 2).

### Receptivity and Exposure to Tobacco Marketing

Table 3 shows results of analyses of age differences in receptivity to tobacco advertising as well as in potential for exposure to tobacco marketing in bars and clubs. Differences for nonsmokers are shown in the upper half of the table, and differences for smokers are shown in the lower half. In general, young adults were significantly more likely than older adults to report an attraction to a cigarette brand's advertisement, regardless of smoking status, and young adult nonsmokers were significantly more likely than older nonsmokers to own a promotional item. There was no age difference in promotional item ownership among smokers. Young adults, regardless of smoking status, also were more likely than older adults to frequent a bar or club more than once per week and, hence, had a greater opportunity to be exposed to cigarette promotions in these venues.

Multivariate analyses among nonsmokers revealed the main effects of race/ethnicity on both receptivity to advertising and likelihood of exposure. When age was held constant, minority nonsmokers were significantly less likely than White nonsmokers to be attracted to cigarette advertising, to own a promotional item, and to frequent a bar or club more than once per week. These analyses also revealed a significant interaction between race/ethnicity and age in promotional item ownership, which indicates that the difference in ownership between younger and older Whites is larger than the difference in ownership between younger and older non-Whites. Multivariate analyses among smokers revealed no significant main effects for race/ethnicity and no significant interactions.

## DISCUSSION

Our study demonstrates that smoking patterns of young adults are quite different from those of older adults. Although individuals between 18 and 30 years of age are significantly more likely to be smokers than are their more mature counterparts, there are indications that the habit is not yet firmly established for a substantial proportion of young adults. Young adults are significantly more likely than older adults to be occasional rather than daily smokers and to smoke fewer than 10 cigarettes per day. Unlike smokers between 31 and 65 years of age, younger smokers are less likely to smoke within 30 minutes of waking, which is one of the estab-

**TABLE 3—Receptivity to Cigarette Advertising and Vulnerability to Promotional Activities Among Adults by Race/Ethnicity: Massachusetts, 1995–2000**

| | Total | | | White | | | Non-White | | |
|---|---|---|---|---|---|---|---|---|---|
| | 18–30 y | 31–65 y | *P* | 18–30 y | 31–65 y | *P* | 18–30 y | 31–65 y | *P* |
| A. Nonsmokers | (n = 2538) | (n = 6830) | | (n = 1636) | (n = 5370) | | (n = 829) | (n = 1259) | |
| Receptivity to advertising, % | | | | | | | | | |
| Attracted to brand ads[abc] | 65.1 | 52.9 | .000 | 67.6 | 54.2 | .000 | 54.3 | 42.6 | .094 |
| Not attracted to brand ads | 34.9 | 47.1 | . . . | 32.4 | 45.8 | . . . | 45.7 | 57.4 | . . . |
| Total | 100 | 100 | | 100 | 100 | | 100 | 100 | |
| Owns tobacco promotional item[d] | 14.6 | 10.9 | .027 | 17.3 | 11.4 | .004 | 4.0 | 6.2 | .177 |
| Does not own tobacco promotional item | 85.4 | 89.1 | . . . | 82.7 | 88.6 | . . . | 96.0 | 93.8 | . . . |
| Total | 100 | 100 | | 100 | 100 | | 100 | 100 | |
| Vulnerability to exposure, % | | | | | | | | | |
| Visits bar at least once per week[bc] | 30.1 | 13.1 | .000 | 32.2 | 13.8 | .000 | 23.2 | 7.7 | .000 |
| Visits bar less than once per week | 69.9 | 86.9 | . . . | 67.8 | 86.2 | . . . | 76.8 | 92.3 | . . . |
| Total | 100 | 100 | | 100 | 100 | | 100 | 100 | |
| B. Smokers | (n = 944) | (n = 2135) | | (n = 691) | (n = 745) | | (n = 224) | (n = 316) | |
| Receptivity to advertising, % | | | | | | | | | |
| Attracted to brand ads[c] | 68.6 | 43.1 | .000 | 71.0 | 40.8 | .000 | 59.3 | 61.2 | .916 |
| Not attracted to brand ads | 31.4 | 56.9 | . . . | 29.0 | 59.2 | . . . | 40.7 | 38.8 | . . . |
| Total | 100 | 100 | | 100 | 100 | | 100 | 100 | |
| Owns tobacco promotional item | 38.0 | 34.4 | .419 | 37.6 | 34.2 | .480 | 43.1 | 27.0 | .232 |
| Does not own tobacco promotional item | 62.0 | 65.6 | . . . | 62.4 | 65.8 | . . . | 56.9 | 73.0 | . . . |
| Total | 100 | 100 | | 100 | 100 | | 100 | 100 | |
| Vulnerability to exposure, % | | | | | | | | | |
| Visits bar at least once a week[c] | 44.0 | 18.7 | .000 | 44.6 | 18.9 | .000 | 40.0 | 11.4 | .019 |
| Visits bar less than once per week | 56.0 | 81.3 | . . . | 55.4 | 81.1 | . . . | 60.0 | 88.6 | . . . |
| Total | 100 | 100 | | 100 | 100 | | 100 | 100 | |

*Note:* ns are unweighted; proportions are weighted. Probability listed is for the $\chi^2$ statistic. Total number of adults is larger than the sum of White and non-White because of some missing data on race/ethnicity.
[a]Sample size is smaller because of the deletion of this item from the survey on July 1, 1998 (n = 2045 for younger adults and n = 5136 for older adults)
[b]Main effect for race controlled for age ($P < .001$)
[c]Main effect for age, controlling for race ($P < .001$)
[d]Interaction effect: race × age ($P < .05$)

lished indicators of high levels of nicotine dependence.[13] Furthermore, young adults are more likely to see themselves as social smokers and to report that they are more likely to smoke when they are with others than when they are alone. It seems reasonable to assume that once a nicotine addiction has become firmly established, smoking will occur regardless of whether others are present.

A recent study of stability and change in smoking patterns found that intermittent (occasional) smoking is a "way station" between the 2 more established classifications of everyday smoker and nonsmoker.[14] A considerable volatility in smoking was observed among occasional smokers; for example, 55% of intermittent smokers converted to everyday smoking within a year, but 29% transitioned to former-smoker status during the same period. The pattern of differences revealed between younger and older adults in our study indicates that the period between the ages of 20 and 29 years is an important time for determining whether tobacco use will become a long-term, harmful addiction or will be rejected for a healthier lifestyle as an individual transitions to marriage, parenthood, and occupational roles. Consequently, the young adult period provides a fertile opportunity for tobacco companies to promote addiction. These findings underscore the importance of reaching the young adult population with effective smoking prevention and cessation messages.

Our study also demonstrates that young adult smokers and nonsmokers are more than twice as likely as older adults to be frequent patrons of bars and clubs and are significantly more attracted to tobacco advertising. Young White nonsmokers are significantly more likely to own a tobacco promotional item than their more mature counterparts. The recent growth of tobacco promotions in bars and clubs is likely to increase smoking initiation by young adult patrons who succumb to the lure of free samples distributed by young company representatives hired to promote tobacco use. These strategies are likely to be

particularly effective in increasing progression from low-level occasional smoking to heavy nicotine addiction among young adults.

Our analyses also suggest that new marketing strategies in bars and clubs may be more effective in promoting tobacco addiction among young White adults relative to their non-White counterparts. Non-White adults tend to smoke at lower levels than do Whites throughout the life cycle. Young non-White nonsmokers are less receptive than are Whites to marketing and are less frequent patrons of bars and clubs. Our sample of non-White smokers was relatively small, and the estimates we obtained were less stable than for Whites. Further investigation will be needed to assess the effectiveness of marketing activities by race/ethnicity.

Several limitations of our study need to be addressed. First, this was a cross-sectional analysis; therefore, no evidence can be provided regarding a causal link among receptivity to advertising, frequency of bar and club patronage, and smoking behavior of adults. Rather, our study is intended to alert researchers and policymakers to the potential for such a link and to highlight the need for continuing vigilance and longitudinal research. Second, since our study was carried out in Massachusetts, where a comprehensive tobacco control program has been in place for almost 10 years, one might wonder whether the age differences in smoking patterns are comparable to those in other localities. Evidence from studies in the United States and abroad indicates that intermittent smoking is more prevalent among younger than older adults,[15,16] and studies of intermittent smokers often exclude young adults because they are presumed to be in a transitional smoking status. Although no published literature details age differences in adult receptivity to tobacco marketing, one would expect that the frequent broadcast of antitobacco messages in Massachusetts would, if anything, reduce the receptivity among young adults. This expectation suggests that our study may provide a conservative indication of the vulnerability of young adults to new tobacco marketing strategies. Our findings highlight the importance of broadening prevention efforts beyond the age of 18 years and of including a focus on preventing progression from low-level, occasional smoking to established, persistent nicotine addiction. ■

## About the Authors

*Lois Biener and Alison B. Albers are with the Center for Survey Research, University of Massachusetts, Boston.*

*Requests for reprints should be sent to Lois Biener, PhD, Center for Survey Research, University of Massachusetts, Boston, 100 Morrissey Blvd, Boston, MA 02125 (e-mail: lois.biener@umb.edu).*

*This article was accepted December 16, 2002.*

## Contributors

L. Biener designed and directed the tobacco survey and wrote the article. A.B. Albers conducted the initial analyses and participated in the writing of the article.

## Acknowledgments

This work was supported by grants from the Robert Wood Johnson Foundation, Substance Abuse Policy Research Program (grant 031587), and the Massachusetts Department of Public Health, Massachusetts Tobacco Control Program (Health Protection Fund).

The authors are grateful for the contribution of Amy L. Nyman, who carried out the final statistical analyses for this article.

## Human Participant Protection

The data collection protocol was approved by the institutional review board of the University of Massachusetts, Boston.

## References

1. National Association of Attorneys General. Multistate settlement with the tobacco industry: Tobacco Control Resource Center, Tobacco Products Liability Project 2000. Available at: http://tobacco.neu.edu/Extra/multistate_settlement.htm. Accessed December 23, 2002.

2. Burns DM, Lora L, Vaughn JW, Chiu YK, Shopland D. Rates of smoking initiation among adolescents and young adults. *Tob Control.* 1995;4:S2–S8.

3. Everett SA, Warren CW, Sharp D, Kann L, Husten CG, Crossett LS. Initiation of cigarette smoking and subsequent smoking behavior among US high school students. *Prev Med.* 1999;29:327–333.

4. Centers for Disease Control and Prevention. Cigarette smoking among high school students, 11 states, 1991–1997. *MMWR Morb Mortal Wkly Rep.* 1999;48:686–692.

5. Sepe E, Glantz SA. Tobacco promotions in the alternative: targeting young adults. *Am J Public Health.* 2002;92:75–78.

6. Cruz TB, Weiner M, Schuster D, Unger J. Growth of tobacco-sponsored bars and clubs from 1996–2000. Article presented at: American Public Health Association 128th Annual Meeting and Exposition; November 12–16, 2000; Boston, Mass.

7. Seven pleasures of the Casbah [advertisement]. *Gentleman's Quarterly.* 2001:58–59.

8. Nyman A, Biener L, Taylor T. Trends in cigar smoking and perceptions of health risks among Massachusetts adults. *Tob Control.* 2002;11(suppl 2):ii25–ii29.

9. *The Health Consequences of Smoking: Nicotine Addiction: A Report of the Surgeon General.* Rockville, Md: US Dept of Health and Human Services, Office on Smoking and Health; 1998.

10. Bureau of the Census. Available at: http://factfinder.census.gov. Accessed December 23, 2002.

11. Centers for Disease Control and Prevention. Current trends/differences in the age of smoking initiation between Blacks and Whites—United States. *MMWR Morb Mortal Wkly Rep.* 1991;40:754–757.

12. *Women and Smoking: A Report of the Surgeon General.* Rockville, Md: US Dept of Health and Human Services; 2001.

13. Fagerstrom KO. Measuring degree of physical dependence to tobacco smoking with reference to individualization of treatment. *Addict Behav.* 1978;3:235–241.

14. McCarthy WJ, Zhou Y, Hser Y. Individual change amid stable smoking patterns in polydrug users over 3 years. *Addict Behav.* 2001;26:143–149.

15. Linstrom M. Desire to stop smoking among intermittent and daily smokers: a population-based study. *Tob Control.* 2001;10:396–397.

16. Husten CG, McCarty MC, Giovino GA, et al. Intermittent smokers: a descriptive analysis of persons who have never smoked daily. *Am J Public Health.* 1998;88:86–89.